# Refine Search

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| (14 AND 17).USPT. | 12 |
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## Search History

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|---|---|---|---|
| *DB=USPT; PLUR=YES; OP=ADJ* | | | |
| L18 | L14 AND L17 | 12 | L18 |
| L17 | packet$1 near4 complete$ | 4838 | L17 |
| L16 | packet$1 near4 complete$1 | 4152 | L16 |
| L15 | L14 | 13 | L15 |
| L14 | l12 and L13 | 13 | L14 |
| L13 | incoming packet$1 | 2713 | L13 |
| L12 | l10 and L11 | 36 | L12 |
| L11 | header$1 | 67710 | L11 |
| L10 | l8 and L9 | 36 | L10 |
| L9 | hash$ | 38656 | L9 |
| L8 | l2 and l5 and L7 | 166 | L8 |
| L7 | flow | 1295032 | L7 |
| L6 | l2 and l4 and L5 | 0 | L6 |

| | | | |
|---|---|---|---|
| L5 | pre process$ or preprocessing | 17929 | L5 |
| L4 | microflow or micro-flow | 458 | L4 |
| L3 | 6430184.pn. | 1 | L3 |
| L2 | order$ near5 l1 | 7499 | L2 |
| L1 | packet$1 | 60143 | L1 |

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1 Trading packet headers for packet processing
Girish P. Chandranmenon, George Varghese
April 1996 **IEEE/ACM Transactions on Networking (TON)**, Volume 4 Issue 2
Full text available: pdf(1.41 MB) Additional Information: full citation, references, citings, index terms, review

2 Trading packet headers for packet processing
Girish P. Chandranmenon, George Varghese
October 1995 **ACM SIGCOMM Computer Communication Review , Proceedings of the conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 25 Issue 4
Full text available: pdf(1.21 MB) Additional Information: full citation, abstract, references, citings, index terms

In high speed networks, packet processing is relatively expensive while bandwidth is cheap. Thus it pays to add information to packet headers to make packet processing easier. While this is an old idea, we describe several specific new mechanisms based on this principle. We describe a new technique, *source hashing*, which can provide *O*(1) lookup costs at the Data Link, Routing, and Transport layers. Source hashing is especially powerful when combined with the old idea of a *flow I* ...

3 Measurement: A high-level programming environment for packet trace anonymization and transformation
Ruoming Pang, Vern Paxson
August 2003 **Proceedings of the 2003 conference on Applications, technologies, architectures, and protocols for computer communications**
Full text available: pdf(251.27 KB) Additional Information: full citation, abstract, references, index terms

Packet traces of operational Internet traffic are invaluable to network research, but public sharing of such traces is severely limited by the need to first remove all sensitive information. Current trace anonymization technology leaves only the packet headers intact, completely stripping the contents; to our knowledge, there are no publicly available traces of any significant size that contain packet payloads. We describe a new approach to transform and anonymize packet traces. Our tool provide ...

**Keywords:** anonymization, internet, measurement, network intrusion detection, packet trace, privacy, transformation

4 Packet classification using tuple space search

V. Srinivasan, S. Suri, G. Varghese

August 1999 **ACM SIGCOMM Computer Communication Review , Proceedings of the conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 29 Issue 4

Full text available: pdf(1.46 MB) Additional Information: full citation, abstract, references, citings, index terms

Routers must perform packet classification at high speeds to efficiently implement functions such as firewalls and QoS routing. Packet classification requires matching each packet against a database of filters (or rules), and forwarding the packet according to the highest priority filter. Existing filter schemes with fast lookup time do not scale to large filter databases. Other more scalable schemes work for 2-dimensional filters, but their lookup times degrade quickly with each additional dime ...

5 High-speed policy-based packet forwarding using efficient multi-dimensional range matching

T. V. Lakshman, D. Stiliadis

October 1998 **ACM SIGCOMM Computer Communication Review , Proceedings of the ACM SIGCOMM '98 conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 28 Issue 4

Full text available: pdf(1.82 MB) Additional Information: full citation, abstract, references, citings, index terms

The ability to provide differentiated services to users with widely varying requirements is becoming increasingly important, and Internet Service Providers would like to provide these differentiated services using the same shared network infrastructure. The key mechanism, that enables differentiation in a connectionless network, is the packet classification function that parses the headers of the packets, and after determining their context, classifies them based on administrative policies or re ...

6 Hash-based IP traceback

Alex C. Snoeren

August 2001 **ACM SIGCOMM Computer Communication Review , Proceedings of the 2001 conference on Applications, technologies, architectures, and protocols for computer communications**, Volume 31 Issue 4

Full text available: pdf(179.03 KB) Additional Information: full citation, references, citings, index terms

7 Single-packet IP traceback

Alex C. Snoeren, Craig Partridge, Luis A. Sanchez, Christine E. Jones, Fabrice Tchakountio, Beverly Schwartz, Stephen T. Kent, W. Timothy Strayer

December 2002 **IEEE/ACM Transactions on Networking (TON)**, Volume 10 Issue 6

Full text available: pdf(528.41 KB) Additional Information: full citation, abstract, references, citings, index terms

The design of the IP protocol makes it difficult to reliably identify the originator of an IP packet. Even in the absence of any deliberate attempt to disguise a packet's origin, widespread packet forwarding techniques such as NAT and encapsulation may obscure the packet's true source. Techniques have been developed to determine the source of large packet flows, but, to date, no system has been presented to track individual packets in an efficient, scalable fashion. We present a hash-based techn ...

**Keywords**: IP traceback, computer network management, computer network security,

denial of service (DoS), network fault diagnosis, wide-area networks (WANs)

8 Network security: Efficient packet marking for large-scale IP traceback
Michael T. Goodrich
November 2002 **Proceedings of the 9th ACM conference on Computer and communications security**
Full text available: pdf(239.98 KB) Additional Information: full citation, abstract, references, citings, index terms

We present a new approach to IP traceback based on the probabilistic packet marking paradigm. Our approach, which we call randomize-and-link, uses large checksum cords to "link" message fragments in a way that is highly scalable, for the checksums serve both as associative addresses and data integrity verifiers. The main advantage of these checksum cords is that they spread the addresses of possible router messages across a spectrum that is too large for the attacker to easily create messages th ...

**Keywords:** denial-of-service, packet marking, traceback

9 Fast and scalable layer four switching
V. Srinivasan, G. Varghese, S. Suri, M. Waldvogel
October 1998 **ACM SIGCOMM Computer Communication Review , Proceedings of the ACM SIGCOMM '98 conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 28 Issue 4
Full text available: pdf(1.76 MB) Additional Information: full citation, abstract, references, citings, index terms

In Layer Four switching, the route and resources allocated to a packet are determined by the destination address as well as other header fields of the packet such as source address, TCP and UDP port numbers. Layer Four switching unifies firewall processing, RSVP style resource reservation filters, QoS Routing, and normal unicast and multicast forwarding into a single framework. In this framework, the forwarding database of a router consists of a potentially large number of filters on key header ...

10 Crypto-based identifiers (CBIDs): Concepts and applications
Gabriel Montenegro, Claude Castelluccia
February 2004 **ACM Transactions on Information and System Security (TISSEC)**, Volume 7 Issue 1
Full text available: pdf(262.76 KB) Additional Information: full citation, abstract, references, index terms

This paper addresses the identifier ownership problem. It does so by using characteristics of Statistical Uniqueness and Cryptographic Verifiability (SUCV) of certain entities which this document calls SUCV Identifiers and Addresses, or, alternatively, Crypto-based Identifiers. Their characteristics allow them to severely limit certain classes of denial-of-service attacks and hijacking attacks. SUCV addresses are particularly applicable to solve the address ownership problem that hinders mechani ...

**Keywords:** Security, address ownership, authorization, group management, mobile IPv6, opportunistic encryption

11 Trajectory sampling for direct traffic observation
N. G. Duffield, Matthias Grossglauser
June 2001 **IEEE/ACM Transactions on Networking (TON)**, Volume 9 Issue 3
Full text available: pdf(251.55 KB) Additional Information: full citation, abstract, references, citings, index terms

Traffic measurement is a critical component for the control and engine ering of communication networks. We argue that traffic measurement should make it possible to obtain the spatial flow of traffic through the domain, i.e., the paths followed by packets between any ingress and egress point of the domain. Most resource allocation and capacity planning tasks can benefit from such information. Also, traffic measurements should be obtained without a routing model and without knowledge of netw ...

**Keywords**: Hash functions, Internet traffic measurement, packet sampling, traffic engineering

**12** Trajectory sampling for direct traffic observation

N. G. Duffield, M. Grossglauser

August 2000 **ACM SIGCOMM Computer Communication Review , Proceedings of the conference on Applications, Technologies, Architectures, and Protocols for Computer Communication**, Volume 30 Issue 4

Full text available: pdf(421.07 KB) Additional Information: full citation, abstract, references, citings, index terms

Traffic measurement is a critical component for the control and engineering of communication networks. We argue that traffic measurement should make it possible to obtain the spatial flow of traffic through the domain, i.e., the paths followed by packets between any ingress and egress point of the domain. Most resource allocation and capacity planning tasks can benefit from such information. Also, traffic measurements should be obtained without a routing model and without knowledge of netwo ...

**13** A pseudo-machine for packet monitoring and statistics

R. T. Braden

August 1988 **ACM SIGCOMM Computer Communication Review , Symposium proceedings on Communications architectures and protocols**, Volume 18 Issue 4

Full text available: pdf(962.06 KB) Additional Information: full citation, abstract, references, citings, index terms

This paper concerns the design of a flexible and efficient packet monitoring program for analyzing traffic patterns and gathering statistics on a packet network. This monitor operates in real time, using an analyzer which is an interpretive pseudo-machine driving object-oriented data collection programs. The pseudo-program for the interpreter is "compiled" from configuration commands written in a monitoring control language.

**14** Efficient demultiplexing of incoming TCP packets

Paul E. McKenney, Ken F. Dove

October 1992 **ACM SIGCOMM Computer Communication Review , Conference proceedings on Communications architectures & protocols**, Volume 22 Issue 4

Full text available: pdf(985.58 KB) Additional Information: full citation, abstract, references, citings, index terms

When a transport protocol segment arrives at a receiving system, the receiving system must determine which application is to receive the protocol segment. This decision is typically made by looking up a protocol control block (PCB) for the segment, based on information in the segment's header. PCB lookup (a form of demultiplexing) is typically one of the more expensive operations in handling inbound protocol segment [Fe190]. Many recent protocol optimizations for the Transmission ...

**15** A multi-user data flow architecture

F. J. Burkowski

May 1981 **Proceedings of the 8th annual symposium on Computer Architecture**

Full text available: pdf(606.85 KB) Additional Information: full citation, abstract, references, citings, index terms

This paper discusses the design of a prototype data flow machine that has memory management hardware in each memory block. This facility allows loading and deleting code that is produced by independent compilations. The first sections of the paper deal with the general architecture of the machine and the format specifications for the instruction cells, logical addresses, and switch packets. The paper concludes with a discussion of the mapping hardware used in the memory blocks. The results ...

16 Routing with a clue

Yehuda Afek, Anat Bremler-Barr, Sariel Har-Peled

December 2001 **IEEE/ACM Transactions on Networking (TON)**, Volume 9 Issue 6

Full text available: pdf(227.57 KB) Additional Information: full citation, abstract, references, index terms

We suggest a new simple forwarding technique to speed up IP destination address lookup. The technique is a natural extension of IP, requires 5 bits in the IP header (IPv4, 7 in IPv6), and performs IP lookup nearly as fast as IP/Tag switching but with a smaller memory requirement and a much simpler protocol. The basic idea is that each router adds a "clue" to each packet, telling its downstream router where it ended the IP lookup. Since the forwarding tables of neighboring routers are similar, th ...

**Keywords:** Best matching prefix, IP forwarding, IP lookup, IP routing, MPLS

17 Routing with a clue

Anat Bremler-Barr, Yehuda Afek, Sariel Har-Peled

August 1999 **ACM SIGCOMM Computer Communication Review , Proceedings of the conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 29 Issue 4

Full text available: pdf(1.26 MB) Additional Information: full citation, abstract, references, citings, index terms

We suggest a new simple forwarding technique to speed-up IP destination address lookup. The technique is a natural extension of IP, requires 5 bits in the IP header (IPv4, 7 in IPv6) and performs IP lookup nearly as fast as IP/Tag-switching but with a smaller memory requirement and a much simpler protocol. The basic idea is that each router adds a "clue" to each packet, telling its downstream router where it ended the IP lookup. Since the forwarding tables of neighboring routers are similar, the ...

18 BPF+: exploiting global data-flow optimization in a generalized packet filter architecture

Andrew Begel, Steven McCanne, Susan L. Graham

August 1999 **ACM SIGCOMM Computer Communication Review , Proceedings of the conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 29 Issue 4

Full text available: pdf(1.55 MB) Additional Information: full citation, abstract, references, citings, index terms

A *packet filter* is a programmable selection criterion for classifying or selecting packets from a packet stream in a generic, reusable fashion. Previous work on packet filters falls roughly into two categories, namely those efforts that investigate flexible and extensible filter abstractions but sacrifice performance, and those that focus on low-level, optimized filtering representations but sacrifice flexibility. Applications like network monitoring and intrusion detection, however, requ ...

19 A flow-based approach to datagram security

Suvo Mittra, Thomas Y. C. Woo

October 1997 **ACM SIGCOMM Computer Communication Review , Proceedings of the ACM SIGCOMM '97 conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 27 Issue 4

Full text available: pdf(2.04 MB) Additional Information: full citation, abstract, references, citings, index terms

Datagram services provide a simple, flexible, robust, and scalable communication abstraction; their usefulness has been well demonstrated by the success of IP, UDP, and RPC. Yet, the overwhelming majority of network security protocols that have been proposed are geared towards connection-oriented communications. The few that do cater to datagram communications tend to either rely on long term host-pair keying or impose a session-oriented (i.e., requiring connection setup) semantics.Separately, t ...

**20** Dealing with high speed links and other measurement challenges: A method to compress and anonymize packet traces

Markus Peuhkuri

November 2001 **Proceedings of the First ACM SIGCOMM Workshop on Internet Measurement**

Full text available: pdf(792.18 KB) Additional Information: full citation, abstract, references, citings, index terms

Data volume and privacy issues are one of problems related to large-scale packet capture. Utilizing flow nature of Internet traffic can reduce data volume. Removing sensitive information such as IP addresses enchanges privacy. Our method makes possible to have same replacement value for given IP address even if capture location or time is different.

**Keywords:** anonymization, data compression, packet capture

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